

We claim:

1 1. A process for separating a mixture of two enantiomers; said process comprising
2 transporting the enantiomers through a medium comprising polymerized dipeptide chiral micelles, or
3 transporting the enantiomers and a medium comprising polymerized dipeptide chiral micelles over a
4 substrate; wherein said micelles have differing affinities for the two enantiomers, and wherein the
5 differing affinities cause the two enantiomers to move through the medium or over the substrate at
6 different velocities, whereby the enantiomers become separated from one another.

1 2. A process as recited in Claim 1, wherein said transporting step comprises performing
2 liquid chromatography.

1 3. A process as recited in Claim 1, wherein said transporting step comprises performing
2 capillary electrophoresis.

1 4. A process as recited in Claim 1, wherein said transporting step comprises performing
2 a liquid-liquid extraction between two immiscible liquid phases, wherein said micelles are substantially
3 soluble in only one of the two liquid phases.

1 5. A process as recited in Claim 1, wherein said transporting step comprises performing
2 gas chromatography.

1 6. A process as recited in Claim 1, wherein said transporting step comprises transporting
2 the enantiomers and said micelles across a membrane.

1 7. A process as recited in Claim 1, wherein the medium additionally comprises a chiral
2 selector other than said micelles, wherein said chiral selector has differing affinities for the two
3 enantiomers.

1 8. A process as recited in Claim 7, wherein said chiral selector comprises a chiral
2 cyclodextrin.

1 9. A process as recited in Claim 7, wherein said chiral selector comprises a crown ether.

1 10. A process as recited in Claim 7, wherein said chiral selector comprises a bile salt.

1 11. A process as recited in Claim 1, wherein said micelles comprise a polymer of monomers,
2 wherein each of said monomers comprises an unsaturated hydrocarbon chain linked to a chiral dipeptide.

1 12. A process as recited in Claim 1, wherein said micelles comprise a mixture of different
2 polymerized dipeptide chiral micelles.

1 13. A process as recited in Claim 1, wherein said micelles comprise a co-polymer of
2 different dipeptide chiral surfactant monomers.

1 14. A process as recited in Claim 1, wherein said micelles comprise reversed polymerized
2 dipeptide chiral micelles.

1 **15.** A process as recited in Claim 1, wherein said micelles comprise poly (sodium
2 N-undecylenyl-L-valine-L-valine), or poly (sodium N-undecylenyl-D-valine-D-valine), or poly (sodium
3 N-undecylenyl-L-leucine-L-leucine), or poly (sodium N-undecylenyl-D-leucine-D-leucine), or
4 poly (sodium N-undecylenyl-L-leucine-L-valine), or poly (sodium N-undecylenyl-D-leucine-D-valine),
5 or poly (sodium N-undecylenyl-L-valine-L-leucine), or poly (sodium N-undecylenyl-D-valine-D-
6 leucine).

1 **16.** A process as recited in Claim 1, wherein the enantiomers are hydrophilic; wherein the
2 medium is an aqueous or nonaqueous polar medium; and wherein the amino acid of the dipeptide closer
3 to the polar medium is chiral.

1 **17.** A process as recited in Claim 1, wherein the enantiomers are hydrophobic; wherein the
2 medium is an aqueous or nonaqueous polar medium; and wherein the amino acid of the dipeptide farther
3 from the polar medium is chiral.

1 **18.** A polymerized dipeptide chiral micelle; wherein said polymerized dipeptide chiral
2 micelle is not a polymer of a compound selected from the group consisting of *N*-undec-10'-enoyl-L-
3 prolyl-L-glutamic acid, *N*-undec-10'-enoyl-L-methionyl-L-glutamic acid, and *N*-undec-10'-enoyl-L-
4 phenylalanyl- β -alanine.

1 **19.** A micelle as recited in Claim 18, wherein said micelle comprises a polymer of
2 monomers, wherein each of said monomers comprises an unsaturated hydrocarbon chain linked to a
3 chiral dipeptide.

1 **20.** A composition of matter comprising a mixture of a plurality of different polymerized
2 chiral micelles, wherein each of said polymerized chiral micelles is a micelle as recited in Claim 18.

1 **21.** A micelle as recited in Claim 18, wherein said micelle comprises a co-polymer of a
2 plurality of different dipeptide chiral surfactant monomers.

1 **22.** A micelle as recited in Claim 18, wherein said micelle comprises a reversed polymerized
2 chiral micelle.

1 **23.** A micelle as recited in Claim 18, wherein said micelle comprises poly (sodium
2 N-undecylenyl-L-valine-L-valine), or poly (sodium N-undecylenyl-D-valine-D-valine), or poly (sodium
3 N-undecylenyl-L-leucine-L-leucine), or poly (sodium N-undecylenyl-D-leucine-D-leucine), or
4 poly (sodium N-undecylenyl-L-leucine-L-valine), or poly (sodium N-undecylenyl-D-leucine-D-valine),
5 or poly (sodium N-undecylenyl-L-valine-L-leucine), or poly (sodium N-undecylenyl-D-valine-D-
6 leucine).

1 **24.** A process for separating a mixture of two enantiomers; said process comprising
2 transporting the enantiomers through a medium comprising polymerized oligopeptide chiral micelles,
3 or transporting the enantiomers and a medium comprising polymerized oligopeptide chiral micelles over
4 a substrate; wherein said micelles have differing affinities for the two enantiomers, and wherein the
5 differing affinities cause the two enantiomers to move through the medium or over the substrate at
6 different velocities, whereby the enantiomers become separated from one another.

1 **25.** A process as recited in Claim 24, wherein said transporting step comprises performing
2 liquid chromatography.

1 **26.** A process as recited in Claim 24, wherein said transporting step comprises performing
2 capillary electrophoresis.

1 **27.** A process as recited in Claim 24, wherein said transporting step comprises performing
2 a liquid-liquid extraction between two immiscible liquid phases, wherein said micelles are substantially
3 soluble in only one of the two liquid phases.

1 **28.** A process as recited in Claim 24, wherein said transporting step comprises performing
2 gas chromatography.

1 **29.** A process as recited in Claim 24, wherein said transporting step comprises transporting
2 the enantiomers and said micelles across a membrane.

1 **30.** A process as recited in Claim 24, wherein the medium additionally comprises a chiral
2 selector other than said micelles, wherein said chiral selector has differing affinities for the two
3 enantiomers.

1 **31.** A process as recited in Claim 28, wherein said chiral selector comprises a chiral
2 cyclodextrin.

1 **32.** A process as recited in Claim 28, wherein said chiral selector comprises a crown ether.

1 **33.** A process as recited in Claim 28, wherein said chiral selector comprises a bile salt.

1 **34.** A process as recited in Claim 24, wherein said micelles comprise a polymer of
2 monomers, wherein each of said monomers comprises an unsaturated hydrocarbon chain linked to a
3 chiral oligopeptide.

1 **35.** A process as recited in Claim 24, wherein said micelles comprise a mixture of different
2 polymerized oligopeptide chiral micelles.

1 **36.** A process as recited in Claim 24, wherein said micelles comprise a co-polymer of
2 different oligopeptide chiral surfactant monomers.

1 **37.** A process as recited in Claim 24, wherein said micelles comprise reversed polymerized
2 oligopeptide chiral micelles.

1 **38.** A process as recited in Claim 24, wherein the enantiomers are hydrophilic; wherein the
2 medium is an aqueous or nonaqueous polar medium; and wherein the amino acid of the oligopeptide
3 closest to the polar medium is chiral.

1 **39.** A process as recited in Claim 24, wherein the enantiomers are hydrophobic; wherein the
2 medium is an aqueous or nonaqueous polar medium; and wherein at least one of the amino acids of the
3 oligopeptide that is not closest to the polar medium is chiral.

1 **40.** A polymerized oligopeptide chiral micelle; wherein each monomer unit of said
2 polymerized oligopeptide chiral micelle contains a plurality of at least three amino acid residues.

1 **41.** A micelle as recited in Claim 40, wherein said micelle comprises a polymer of
2 monomers, wherein each of said monomers comprises an unsaturated hydrocarbon chain linked to a
3 chiral oligopeptide.

1 **42.** A composition of matter comprising a mixture of a plurality of different polymerized
2 chiral micelles, wherein each of said polymerized chiral micelles is a micelle as recited in Claim 40.

1 **43.** A micelle as recited in Claim 40, wherein said micelle comprises a co-polymer of a
2 plurality of different oligopeptide chiral surfactant monomers.

1 **44.** A micelle as recited in Claim 40, wherein said micelle comprises a reversed polymerized
2 chiral micelle.

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